

U.S. Application No.: 09/509,626
RESPONSE TO FINAL OFFICE ACTION UNDER 37 C.F.R. § 1.116

ATTORNEY DOCKET: 3926.004

REMARKS

Claims 1-10 are pending. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being allegedly obvious. No claim is amended or cancelled herein and so a listing of the claims is not required. In the following remarks, the paragraph numbering applied by the Examiner is adopted.

Paragraph 2 (obviousness):

Claims 1-3, 8 and 10 are rejected under 35 U.S.C. §103(a) as being allegedly unpatentable for obviousness over Erten et al. (US 6,236,862; "Ertan") in view of Taniwa (US 5,220,554).

Applicant respectfully traverses on the grounds that a prima facie case of obviousness has not been established.

According to the Examiner, Erten teaches all of the elements of the rejected claims except for the element of superposing taking place subsequent to the step of analog signal processing. The Examiner cites Taniwa as teaching analog signal processing prior to a superposition, and asserts that it would have been obvious to have applied the analog signal processing step of Taniwa to the process of Erten "in order to correctly demodulate data even when the reproduced signal includes distortion."

Applicant notes that Erten teaches a general method for the separation of combined signals of essentially any modulation type, in which two or more instance of a mixed signal are

separately digitized and the individual signals are then computationally separated by numerical solution of a set of differential equations according to an algorithm disclosed in Erten.

Applicant further notes that Taniwa teaches a signal processing apparatus for demodulating modulated data stored on an optical medium and recovered as a "reproduced analog signal." The apparatus comprises an analog stage and a subsequent digital stage, which together constitute a process for demodulation. The demodulation process includes the step of combining two signals, both of which are derived from the reproduced analog signal (see col. 5, lines 61-68, and Fig. 5). The goal of Taniwa is to recover a single data stream even if the reproduced analog signal includes distortion.

In contrast, the present invention is directed toward improving the processing efficiency of various radio standards, particularly combined processing of various radio standards in a single, or multi-mode, radio receiver (see pp.2-3 of the specification). The invention comprises the steps of analog signal processing, superposing multiple various modulation types, and digital signal processing.

A particular advantage of the present invention is that, in comparison to hitherto conventional systems, fewer hardware components are required. Thereby, A/D converters for mixers and filters can be saved.

Applicant first notes that, in order to support a prima

facie case of obviousness, the cited art must collectively teach or suggest all of the elements of the claim. At paragraph 2 of the Office Action, claim 14 of Ertan is cited as teaching the step of "superposing multiple various modulation types of radio standards in a single radio receiver." Applicant respectfully disagrees on the grounds that claim 14 of Ertan teaches multiple transmitter sources (steps 4 and 5) that transmit messages that mix or superpose during transmission in a channel prior to their reception by a radio receiver (step 6). At a receiver, multiple copies of the mixed signal are produced, which are separately digitized for numerical processing.

In contrast, as disclosed at pages 3 and 4 of the specification, the term "superposing multiple various modulation types of radio standards in a single radio receiver" is taught as meaning, at the least, that two modulated signals are combined or added within a single radio receiver, for example in the manner shown in Fig. 2 of the present application directly under the term "ZF1".

Thus, the mixing or superposition step in Ertan, which occurs in a channel prior to reception, is quite distinct from the step of "superposing multiple various modulation types of radio standards in a single radio receiver" as recited in claim 1 and its dependent claims. As one illustration of this difference, if the meaning of superposition as the term is used in Ertan were adopted, it would be quite impossible for analog signal processing to precede the superposition step as recited

in claim 1. Therefore, Applicant asserts that Ertan does not teach or suggest the step of "superposition of multiple various modulation types of radio standards in a single radio receiver."

Applicant further asserts that this deficiency is not remedied by Taniwa, which teaches combined analog and digital processes that together constitute a single algorithm (Fig. 4) for the recovery of data from optical media in the presence of distortion. Applicant asserts that the analog and digital processes are inextricably linked to form a single process or algorithm, and cannot meaningfully be separated.

Therefore, Applicant asserts that neither Ertan nor Taniwa teaches or suggests the step of "superposition of multiple various modulation types of radio standards in a single radio receiver" and so their combination cannot render claim 1 or its dependent claims obvious. MPEP 2143.03.

Further, Ertan and Taniwa are directed to solving quite different problems. According to the Examiner, one of ordinary skill would have been motivated to modify Ertan by adding the prior analog signal processing step taught by Taniwa "in order to correctly demodulate data even when the reproduced signal includes distortion." However, Taniwa is directed to recovering a single data stream in the presence of distortion, while the present invention is directed to simultaneously receiving different radio standards. Applicant asserts that one of ordinary skill would not have been motivated to combine such completely different processes (MPEP 2143.03), and would

particularly not have been motivated to add just the algorithm-specific analog step of Taniwa, since this would not improve the process of Ertan, merely render it non-functional. Applicant therefore asserts that one of ordinary skill would not have been motivated to combine the teachings of Ertan and Taniwa; would not have had any reasonable expectation of success in doing so (MPEP 2143.02); and would not have arrived at the claimed invention even if he had done so.

Accordingly, Applicant asserts that a prima facie case of obviousness has not been established, and respectfully requests that the rejection of claims 1-3, 8 and 10 be withdrawn.

Paragraph 3 (obviousness):

Claims 4 and 5 are rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Erten and Taniwa in view of Ostman (US 6,069,923). The Examiner cites Ostman as teaching that the sum of the output of two narrow band oscillators is employed [as a] local oscillator for the first mixing step.

Applicant asserts that Ostman does not remedy the deficiencies of Erten and Taniwa, and therefore the combination of Erten, Taniwa and Ostman cannot render the present invention obvious for reasons given above.

Accordingly, Applicant respectfully requests that the rejection of claims 4 and 5 be withdrawn.

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Paragraph 4 (obviousness):

Claim 6 is rejected under 35 U.S.C. §103(a) as being unpatentable over Erten and Taniwa in view of Krasner (WO 97/14056).

Applicant asserts that Krasner does not remedy the deficiencies in combining Erten and Taniwa, as noted above, and for reasons given above respectfully requests that the rejection of claim 6 be withdrawn.

Paragraph 5 (obviousness):

Claim 7 is rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Erten et al and Taniwa and Krasner in view of Kim (US 5,963,592). Kim is cited as providing the element of an OFDM-encoded signal.

Applicant asserts that Kim does not remedy the deficiencies in combining Erten, Taniwa and Krasner, as noted above, and respectfully requests that the rejection of claim 7 be withdrawn.

Paragraph 6 (obviousness):

Claim 9 is rejected under 35 U.S.C. §103(a) as being unpatentable over Erten et al, Taniwa and O (US 6,061,338). The Examiner admits that the combination of Erten and Taniwa does not teach or suggest a CMDA encoded signal, and the Examiner cites O for this teaching.

O teaches a method and apparatus for rapidly switching

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between analog and CDMA modulation types in a mobile communication system. O does not teach the superposition of analog and CDMA modulation types, as these modulation types are temporally separated, and therefore cannot remedy the deficiency of Erten and Taniwa. Therefore, their combination with O cannot render claim 9 obvious because not all of the elements of claim 9 are taught or suggested, as required.

Further, According to the Examiner, the required motivation to combine O's teaching of CDMA to the teaching of Erten and Taniwa is "to expand the capabilities of the multi-mode receiver." Applicant respectfully asserts that the Examiner appears to be using an impermissible "obvious to try" rationale (MPEP 2145(X)(B)) for combining the teachings, because none of the cited references teach or suggest the desirability of expanding the capabilities of a multi-mode receiver.

Applicant therefore respectfully requests that the rejection of claim 9 be withdrawn.

As there are no further rejections or objections, withdrawal of the rejection and the mailing of a Notice of Allowability are respectfully requested.

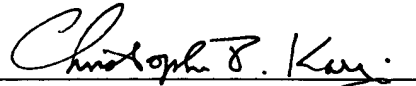
If the Examiner does not consider that the present application is now in condition for allowance, **Applicant hereby requests the courtesy of a telephone interview at the Examiner's**

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convenience, in which any remaining impediments to issuance may be addressed.

Respectfully submitted,



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